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Report Highlights:
The research, production and consumption of plants and plant products resulting from genetic modification of crops are controversial issues in Germany. However, Germany is one of the few countries in the EU where a limited number of hectares (300 ha) are planted to GMO corn. The regulatory framework for GMOs is predominantly set by EU regulations and directives, which in their current form are generally supported by the majority of German politicians. The recently finalized first and major portion of the German genetech law addresses co-existence and liability. The industry and trade regard these national rules as a hinderance to the development and use of green biotechnology. Possible federal elections in September 2005 provide the opportunity that a new coalition government might ease the overly strict liability and co-existence rules into a more practical form.

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Section I: Executive Summary

The research, production and consumption of plants and plant products resulting from genetic modification of crops are controversial issues in Germany. The scientific community and members of the two largest political parties have been generally supportive of biotechnology. However, they are counter-balanced by the Green Party and environment/consumer-related NGOs, such as Greenpeace, which are very pro-active and vocal in expressing their concerns about this technology. Consumer opinion polls in Germany regarding biotechnology fluctuate widely, depending on the wording of the questions. If opinion polls are more detailed and scientific information is incorporated into the questionnaire, responses show a much more supportive and understanding view of biotechnology. The political and the industry focus is currently on intensifying efforts in the field of white biotechnology (basically the use of organic matter such as enzymes, bacteria, plant tissue, etc. for industrial purposes, excluding open field planting), providing opportunities in the field of environmental protection, cost reducing chemical processes, improved utilization of available limited resources, waste reduction, etc. In Germany white biotechnology is perceived positively, in part because Germans believe it does not create unmanageable risks.

In Germany the regulatory framework for GMOs is set by EU regulations and directives (see GAIN report E35091), which in their current form are generally supported by the majority of German politicians. The European Commission however decided that co-existence rules would be determined and set by the individual Member States. In the spring of 2005, the German government finalized its first and major portion of a new genetech law, which addresses the issues of co-existence and liability. This new law is so restrictive that it is viewed by the industry and the trade as a genetech hinderance law for green (agricultural) biotechnology. There is a possibility that Germany will hold federal elections on September 18, 2005. If there is a change in Germany's coalition government, the new government could amend this law by revising the overly strict liability and coexistence regulations into a more practical form that would make GMO crop production more feasible. However, a general revision of the law is unlikely.

For six years, German farmers have been commercially growing a limited amount of Bt corn (only 300 to 500 hectares). Most of the crop is consumed on the farm as silage. Many of these GMO farmers face criticism by GMO opponents. GMO field releases for research purposes are frequently destroyed, making biotech companies hesitate to start new research programs in Germany.

Currently, there are hardly any GMO-labeled food products found on German retail shelves. The retail business refrains from stocking GMO labeled products because they fear that anti-GMO activists may demonstrate in or outside their stores. Consolidation and competition in the German retail market is very intense and the prime marketing tool for the retailers is price. Since profit margins are very narrow in Germany, retailers try to avoid having any negative activity directed at their customers.

Section II: Biotechnology Trade and Production

Commercial Production of Bt corn in Germany

Despite the opposition of the German Federal Ministry of Consumer Protection, Food, and Agriculture (BMVEL) led by Minister Kuenast, a member of the Green Party, German farmers have been planting about 300 to 500 hectares of GMO corn varieties on a commercial basis for the past six years. Since 2003, these genetech varieties are using the GMO trait MON810. Previously, varieties containing the trait Bt176 were used. Since Germany does not allow biotech seed varieties to be registered for unlimited planting, seed companies need

to apply for special marketing permits on a yearly base. This permit is usually granted by the end of February for varieties, which have already passed countrywide seed tests and might be ready for registration in the national seeds register. The temporary seed marketing permit allows the seed companies to market only a limited amount of seeds per variety. In the case of corn, the limit per variety is set at 0.1 percent of the total amount of corn seeds planted in Germany. For the planting season 2005, a maximum volume of about 350 tons of GMO corn seeds were made available.

In early 2005 the Federal Seeds Register (BSA) had already indicated to two American-based seed companies that three GMO corn varieties had passed the necessary variety tests to qualify for seed registration in Germany. The next step for official seed registration is an administrative meeting of BSA, which was tentatively scheduled for the end of May 2005. Shortly before the scheduled date, BMVEL cancelled the meeting. The cancellation was based on a legal opinion/brief prepared for BMVEL, which claims there are legal problems with the EU approval of MON810.

In 2004, an extensive monitoring program accompanied the planting of about 300 hectares of Bt corn. The goal of this monitoring program, sponsored by federal research and state funds, was to determine the extent of the flow of corn pollen into neighboring fields. The industry intended to prove that GMO corn does not create a considerable problem for coexistence with non-GMO varieties. The result of the tests showed that GMO content in corn samples taken more than 20 meters from the GMO plants were below 0.9 percent, the threshold which constitutes the need for labeling the harvested product as GMO.

Once again in 2005, German farmers planted about 300 hectares of Bt corn varieties. Actually at the beginning of 2005, farmers had tentatively registered about 1,000 hectares for the planting of Bt corn varieties. A number of farmers later refrained from planting their fields with GMO varieties, claiming they were pressured by GMO opponents not to grow GMO crops.

To avoid any kind of liability problems for the production of GMO corn in 2005, the German feed milling and grain trading company, Maerka Kraftfutter, made the public promise to purchase the corn from fields neighboring GMO corn fields up to a distance of 500 meters. The purchase price will be equivalent to normal market prices in the region, regardless of GMO content.

Research on GMO Crops

According to German government reports, so far a total of 153 research applications requesting to use field released GMO crops have been filed in Germany. This is well below the 2,035 applications requested EU-wide. Significantly more field releases were approved in France, Spain, Italy and the United Kingdom. The applications for field release in Germany covered a wide variety of plants, such as poplar trees, grapes, grains, oilseeds, beets, potatoes, pulses and others. All these field releases were for research, and not yet at the level of GMO event application approval. It is not possible to predict how soon applications will be filed for final event approval by German companies.

Applications for field releases during the past two years concentrated on potatoes and corn. These are crops, which have a low out-crossing risk in terms of coexistence. The biotech industry has pretty much stopped or reduced field studies with higher out-crossing potential, such as rapeseed, which have the potential to create major controversy with biotech opponents. Despite these efforts, anti-GMO activists of the NGO Greenpeace destroyed test plantings of wheat and potato field releases in 2004. The goal of the researched biotech event in wheat was an increased resistance against grain fusarium, which if successfully

developed would reduce possible health risks for consumers. The work in potatoes concentrates primarily on improvement of the starch composition. Due to the opposition to biotechnology in plant production, leading biotech companies announced that they intend to relocate their research efforts to countries outside of Europe.

Genetech-free Zones

Aside from the commercial production and research areas for GMO crops, groups of German farmers have declared about 110 regions in Germany as GMO-free zones. The total area covered by these GMO-free zones amounts to about 1,000 hectares. A large number of these regions are located in Bavaria and are primarily composed of grassland for dairy production. These zones are formed by the voluntary agreement of farmers to not plant GMO crops in the particular region. In part these declarations are used for tourism purposes. Other non-GMO regions were initiated by organic farmers. We understand that there is no legal enforcement mechanism connected to this declaration that would prevent a farmer from growing GMO plants.

Section III: Biotechnology Policy

Leadership for biotechnology policy in Germany rests with the Federal Ministry for Consumer Protection, Food and Agriculture (BMVEL). However, the Ministries of Economics, Health, Research and Environment are also involved in the opinion and decision-making process and need to approve Germany's voting decision in EU committees and councils. This split of responsibility also applies to Germany's role in the Biosafety and Biodiversity committees. The German regulatory office for GMO authorization and risk assessment is under the political leadership and supervision of BMVEL.

The willingness to promote or at least tolerate the presence of GMO food and feeds and the planting of live genetically modified organisms is highly dependent on the political leadership of BMVEL. In recent public statements, Minister Kuenast, BMVEL, has expressed her support for red (medicinal) biotech and for white (contained industrial) biotech. However, the resistance of Green Party politicians, including Minister Kuenast against green biotech persists.

Regulatory Framework

The regulatory framework for biotechnology is set by EU regulations and directives. While regulations directly apply in all EU member countries, directives have to be transferred and incorporated into national laws. This incorporation process requires that national laws have to be crafted or existing laws need to be amended accordingly. Directives provide the opportunity for member countries to exercise some discretion and strengthen or weaken the EU requirement without altering the basic scope of the EU directive.

The German government took advantage of this discretion while crafting its national genetech law. In particular, rules about liability, coexistence and a public register for fields planted to biotech crops have been crafted in a way that most farmers and an increasing number of researcher refrain from working with GMO varieties or develop GMO events in Germany.

In summary, the current German genetech law makes farmers financially liable if they grow GMO crops and these GMO events pollinate in neighboring fields. If neighboring farmers wish to sell their 'GMO-contaminated' crop as GMO-free conventional or organic crop, they might suffer financial losses. The farmer suffering damages is not required to prove from which field exactly the GMO pollen originated. In the case that there are several neighbors

growing GMO crops, the damaged farmer may file a compensation suit against any one of them. The GMO farmer can be held liable even if he fully follows the prescribed good management practice. To avoid such a controversial situation from happening, the formation of a liability fund is being discussed. However, the German biotech industry fears that their financial contribution to such a liability fund could establish a precedent to demand such liability funds for plant protection chemicals as well, which have the potential to pose a risk to the environment and to health if used inappropriately.

Coexistence rules and good management practices for GMO farmers have not yet been finalized. The most controversial portion of the proposed rules are the required minimum distances between GMO fields and conventional and organic varieties.

The current public GMO field register is viewed with concern by the biotech industry, which fears this information may be used by GMO critics in order to destroy these crops. They are also concerned that farmers on the GMO field register may be intimidated into not planting GMO varieties. The current rules require the farmer to register his field any time from nine months to minimum three months before actual planting. The farmer has to report the exact location of the GMO fields, field size and the GMO trait to the national public register. The register is accessible to everyone through the internet.

For the planting season in 2005, farmers had originally registered about 1,000 hectares to plant to GMO corn. In the end about 300 hectares have actually been planted to GMO corn.

Antibiotic Resistance Marker Genes

The GMO trait Bt176, a construct of the Syngenta company, has been banned for use as a seed in Germany. The German government argues that the presence of an antibiotic resistance marker gene in Bt176 has the potential to pose a threat to public health and to the environment. Although the German research community disagrees with this negative evaluation, Germany recently voted in Brussels against lifting the ban for Bt176.

GMO Threshold levels

The EU labeling directive sets a labeling threshold for unavoidable adventitious presence of GMOs in food and feed at 0.9 percent. However, a threshold level for adventitious GMO content in seeds has not yet been set. The current German government has proposed setting it at detection level or 0.1 percent. Due to the missing threshold level, GMOs are not allowed in conventional or organic seeds. If traces of EU approved GMO traits are found in seeds. these seeds need to be labeled as containing GMO or these seeds cannot be marketed. Fields planted with these seeds need to be recorded in the GMO field register. If seeds with adventitious presence of GMOs are seeded, the regional supervising authorities usually require that these crops be destroyed. Not yet EU approved GMOs are totally prohibited in seeds.

'without GMO' Labeled Products

Prior to the EU labeling regulations, which came in place in 2004, Germany crafted a national law in 1998, which allows the labeling of a product not to contain GMOs. The term to be used is 'without genetechnic'. This label may be used for products derived from conventional seed varieties and from animals, which were not fed with GMO containing feedstuffs. A specific threshold level for adventitious and unavoidable presence of GMOs is not established in the regulation.

The 'without gentech' label has been used very rarely during the past seven years. Currently, one dairy company advertises that it produces milk without gene technology. Another product recently found on retail shelves is kidney beans, where the canner, a French company, claims that the product does not contain GMOs. However, the 'without gentech' label may not be used for products, for which no varieties have yet been genetically modified worldwide, such as oranges or basmati rice among others.

Section IV: Marketing Issues

Biotechnology in crop production is a highly contentious issue in Germany as in most other EU countries. Opinion polls provide widely varying results. Opponents to biotechnology often point to polling results that show that about 70 percent of the German population is in opposition to this technology. Other polls, if questions are asked differently, come to the result that about 83 percent of the people interviewed did not see any problem in finding GMO-labeled products on food retail shelves.

Since the implementation of EU labeling regulations for GMO foods in April 2004, Greenpeace has reportedly found a number of food items on the German retail shelves containing GMOs or GMO-derived products, which in most cases were correctly labeled. Greenpeace activists have also visited restaurants and take-away food places where they found GMO soyoil, which was not labeled on the menu. Greenpeace 'convinced' the restaurant owners and the retailers to switch to other non-GMO products or take the products off the shelf. The products found were imported candy bars containing GMO cornstarch and soybean products, such as soyoil, tofu and bean sprouts.

To avoid GMO labeling of processed food items, the German food industry as well as most other European food processors switched from GMO-origin ingredients to non-GMO alternatives. This substitution was most prevalent for GMO soybean oil, which was replaced with European canola oil.

One of the main reasons why the industry refrains from using biotech products in the production of foodstuffs is the very intensive competitive situation of the German retail market. Low price discount stores are displacing traditional food markets. At the same time the growth rate of the sales area is higher than the growth of gross sales. Competition in the German food retail sector is significantly more intense than in other EU countries since the retail food floor space per 1,000 inhabitants is highest in Germany, 1,400 sqm in Germany versus 850 in France and 700 in the United Kingdom.

Food sales in Germany are predominantly driven by price. As a result, generic products, which are generally more affordable, are increasingly replacing branded products. In view of this intense competition, retail companies wish to avoid placing GMO labeled products on their shelves.

GMO Papaya

On several occasions during 2004, unauthorized GMO papayas were detected on the German retail market. Competent authorities forced the importer to destroy these products which came from genetically modified plants that were bred to be disease resistant. Since this GMO trait is not yet approved in the EU, these GMO papayas were not allowed to be marketed or sold in Germany. Since January 2005, the importer has had to have all incoming papaya shipments from Hawaii tested for GMO presence before they can be marketed.

Testing for GMOs
Germany has a decentralized system for testing and controlling the illegal entry of GMO products into Germany. The control authority to make sure that no unauthorized GMO product enters the German retail market is with the 16 German states (Laender). The Laender establish their own monitoring and sampling plans. Since the experts know what kind of products are potentially 'GMO contaminated' they specifically sample for these products. Sampling is primarily done at the wholesale and the processing level.

NGO Activities
The German green-based NGOs, such as Greenpeace, have undertaken intensive efforts to keep biotech crops off the fields and GMO food products off the shelves. Greenpeace met with German food processors and retailers to request commitments from these companies to keep their retail shelves and production plants GMO-free. We understand that the majority of food processors did not sign such commitments. Companies committing themselves to avoid GMOs are predominantly those dealing with organic products. As a result of circular mailings, Greenpeace developed a purchasing guide for consumers in order to advise where to buy non-GMO foods. Since the German food processing industry has replaced GMO ingredients with other non-GMO products, such as canola oil, Greenpeace is now focusing on the dairy industry. Greenpeace would like to obtain commitments from the dairy companies that they will require their supplying farmers not to use GMO containing feeds. A prominent target for Greenpeace is the Mueller Milch company, a large company specializing in dairy products. Greenpeace is stigmatizing milk products of Mueller Milch as 'gene milk'.

Section V: Capacity Building and Outreach

Informational Visits to the U.S. and Speaker Programs
Since 1997, the FAS Office in Germany has sent numerous groups of policy makers, scientists, representatives of consumer organizations, farm leaders, journalists and other interested parties to the United States to learn about the U.S. system for regulating gene technology.

In addition to these trips to the United States, FAS Germany organized a number of speaker programs for American biotech scientists and farmers to inform interested parties in Germany about the experience in the U.S. with biotech crops. The Agricultural Minister Counselor of the FAS Office in Germany participated in a number of podium discussions and seminars on biotechnology.

Possible Changes in the German Political Arena
Germany could possibly hold federal elections in September 2005. Political opinion polls currently predict that the conservative parties could take over power from the current governing Social Democrat/Green Party coalition. For more than a year, leading politicians of the conservative parties have expressed support for green biotechnology. They are also very critical of the Green Party for crafting a genetech law, which is seen as a hinderance to the agricultural biotech industry. The persistent political support for green biotech by the conservative parties has the potential to gradually alter the underlying general skepticism of the general public with respect to green biotech.

Even if there is a change in government, conservative politicians are expected to support the European approach of process labeling for agricultural products. Consequently labeling and traceability requirements will remain in place regardless of the election results. What could change is the negative attitude towards green biotech. The idea that biotech crops per se

form a risk to health and environment is possibly going to change. The standing of NGOs, as authorities on biotechnology may also diminish.

A change in government could also provide the opportunity to alter the overly strict regulations of the German genetech law. In particular, liability rules and coexistence rules could be re-crafted to make them more practical. It is the expressed goal of the conservative government to make Germany a more hospitable environment for biotech research in order stop biotech researchers and companies from leaving Germany.

White Biotechnology

During recent months, politicians of almost all leading German political parties expressed their support for white biotechnology. Even the Green Party claims that this is a field of research and development, which provides great opportunities to the German economy without expressing noticeable risk to the environment and to health. As a result, this branch of the German biotech industry seems to be faring better than green biotechnology. .

Section VI: Reference Material

Report No.	Date	Title
GM5013	03/18/2005	Marginal Improvement of Biotech Regulations in Germany
GM4051	12/03/2004	German Genetech Law and GMO Test Plantings in 2004
GM4042	10/18/2004	German Genetech Law Expected to be Passed
GM4029	08/10/2004	European Commission not Happy with German Genetech Law
GM4023	06/25/2004	German Court Ruling against Greenpeace
GM4019	05/11/2004	Agricultural Biotechnology – Recent Developments
GM4016	05//03/2004	Biotech Wheat Test Plantings
GM4015	05/03/2004	Aggressive Greenpeace Campaign against GMO Labeled Food Products
GM4014	05/03/2004	German Farmers' Interest in Planting Bt-corn